

REMARKS

Amendments

Claims 1-6 and 9 are amended to use language in accordance conventional US practice. In addition, claim 1 is amended to incorporate features from claims 7 and 8, which are now cancelled. Claim 1 is also amended to recite that the connection piece is a U-shaped sheet. See, e.g., Figures 3 and 4 and the disclosure at page 8, line 28-page 9, line 4. Further, claim 1 is amended to recite that the step of connecting the first and second heat exchanger blocks to one another by means of the U-shaped sheet can be performed before or after the step of connecting the orifices of the mutually confronting sides of the first headers via the connection piece. This concept is readily apparent from the description of the manufacture of the plate heat exchanger in the specification.

Claim 3 is amended to recite that the inlet fluid connection is connected to a side of the first heat exchange block which is perpendicular to the first side of said first heat exchange block. The first side is a side in which inlet and outlet orifices of the heat exchange passages are located. See, e.g., Figure 4.

Also, claim 4 is amended to recite that the first heat exchanger block is provided with a second header and the second header is provided with a second fluid connection wherein both fluid connections are provided on the same side. See, e.g., Figure 4.

New claims 10-23 are directed to further aspects of the invention and are supported throughout the disclosure. See, e.g., page 8, line 7-page 10, line 2, the original claims, and the Figures.

Information Disclosure Statement

In the Office Action at page 3 the Examiner indicates that WO 2002/131919 and WO 2002/011331, cited in the Information Disclosure Statement of February 25, 2004, were not considered. These citations were cited in error. The intended citations were the published US applications US 2002/0131919 and US 2002/0011331, both of which cited in the form PTO-892

attached to the Office Action.

Drawings

At page 3 of the Office Action, the drawings are objected to because the reference numerals 21a, 21b, 22a, and 22b, cited at page 9 of the specification, are not shown in the Figures. Applicants have amended page 9 of the specification to delete reference numerals 21a, 21b, 22a, and 22b.

Withdrawal of the drawing objection is respectfully requested.

Rejection of Claim 8 under 35 USC §112, second paragraph

Claim 8 is rejected as allegedly being indefinite due to the description of the sheet or strip. Specifically, the Examiner questions how the sheet or strip can be covered by itself.

Claim 8 did not recite that the sheet or strip was covered by itself. Instead, claim 8 recited that the connection piece facing the heat exchanger blocks is completely covered by a side face of a heat exchanger block and/or the sheet and/or the strip. The reference numerals used in original claim 8 to identify the connection piece, i.e., 16, 27, were incorrect. The reference numerals should have been 17, 18.

In any event, claim 8 is cancelled. Withdrawal of the rejection is respectfully requested.

Rejection of Claims 1-8 under 35 USC §102(b) in view of Levy et al.

Claims 1-8 are rejected as allegedly being anticipated in view of Levy et al. (US 6,089,313). This rejection is respectfully traversed.

Levy et al. discloses a heat exchanger comprising an elongated vessel and two plate bundles positioned within the vessel. The first plate bundle has channels which provide heat exchange between fluids A and B. The second plate bundle also has channels which provide heat exchange between fluids A and C.

The means for introducing fluid A into the first plate bundle is a nozzle 13 which is connected to manifold 14. The means for removing fluid A from the first plate bundle and introducing it into the second plate bundle are outlet header 16, nozzle 15, and inlet header 43.

Outlet header 16 of the first plate bundle and inlet header 43 of upper section 15 are not connected to one another so as to act as a common inlet header for adjacent heat exchange plate bundles.

In the rejection, the Examiner characterizes nozzle 15 as both a connection piece and as a connection strip. However, Levy et al. does not disclose a connection piece and a separate sheet or strip that connects the two plate bundles to one another. Instead, Levy et al. only discloses nozzle 15 which connects the two bundles.

If the Examiner considers nozzle to be a connection piece introduced between the two headers, then Levy et al. does not disclose a separate sheet or strip that connects the two plate bundles to one another. Alternatively, if the Examiner considers nozzle 15 to somehow be a separate sheet or strip that connects the two plate bundles to one another, which it is not, then Levy does not disclose a separate connection piece introduced between the two headers.

In the rejection, it is asserted that all fluid connections, specifically nozzle 44, of the second plate bundle is on the top left side of the sealed vessel. However, nozzle 44 is not "all" the fluid connections for the second plate bundle. As shown in Figure 3, fluid A enters the second plate bundle at one side via nozzle 15 and manifold 43, and exits the second plate bundle at another side via nozzle 44 and manifold 45. Fluid C enters the second plate bundle at the same as fluid A exits. Fluid C exits the second plate bundle at one side via manifold 48 and nozzle 47. Levy et al. does not disclose a plate bundle wherein all the fluid connections for fluids A, B, or C are located on the same side of a plate bundle.

Also, in the rejection it is asserted that the two manifolds 16 and 43 are connected to one another in such a way that their cross section does not decrease at the connection point. But, these two manifolds are connected via nozzle 15. The rejection fails to demonstrate that nozzle 15 has the size same cross section as the cross section of either manifold 16 or 43.

In view of the above remarks, it is respectfully submitted that Levy et al. fails to anticipate applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

Rejection of Claims 1-8 under 35 USC §102(b) in view of Chevalier et al.

Claims 1-8 are rejected as allegedly being anticipated in view of Chevalier et al. (US

5,144,809). This rejection is respectfully traversed.

As shown in Figure 2, Chevalier et al. discloses an apparatus for production of nitrogen. The apparatus has a lower section 12 which is divided into a lower portion 13 and an upper portion 14. The apparatus also has an upper section 15. Sections 12 and 15 are sealingly separated from one another by bars 5 shown in the Figure as line 11. Upper portion 14 of lower section 12 is designed as a fractionation column. Upper section 15 is characterized as a heat exchanger. See column 2, lines 54-65.

Upper portion 14 has an inlet header 6 and an outlet header on the same side of the apparatus. Upper section 15 has two inlet headers 6 on the same side of the apparatus, two outlet headers 9 on another side of the apparatus, and a third header 9 on a third side of the apparatus. See, e.g., Figures 1 and 2.

In the rejection, it is asserted that headers 6 and 9 of two adjacent heat exchange blocks are provided on their mutually confronting sides with orifices that are connected to one another. This is not correct.

As shown in Figure 2, header 9 of upper portion 14 is provided with an orifice on its top surface. This orifice connects to a storage tank 18. Header 6 of upper section 15 is also provided with an orifice on its top surface. This orifice also connects to the storage tank 18. It is evident from the Figure that the top surfaces of these headers 9 and 6 do not confront one another. Thus, these headers do not have orifices on their mutually confronting sides.

Also, Chevalier does not disclose a heat exchanger in which fluid connections for any of the fluids are on the same side. See, e.g., the fluid flows shown in Figure 1. Further, Chevalier et al. do not show header 9 of upper portion 14 and header 6 of upper section 15 being connected to one another in such a way that their cross section does not decrease at the connection point. See the connections to storage tank 18. Outlet header 9 of upper portion 14 and inlet header 6 of upper section 15 are not connected to one another so as to act as a common inlet header for adjacent heat exchange blocks.

In addition, the rejection fails to indicate which part of the apparatus of Chevalier et al. serves as a connection piece introduced between two headers wherein the side of the connection piece which faces the heat exchanger blocks is completely covered by a side face of a heat

exchanger block and/or a sheet and/or a strip.

In view of the above remarks, it is respectfully submitted that Chevalier et al. fails to anticipate applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

Rejection of Claims 1-5, 7 and 8 under 35 USC §102(e) in view of Dwyer et al.

Claims 1-5, 7 and 8 are rejected as allegedly being anticipated in view of Dwyer et al. (US 2004/0108105). This rejection is respectfully traversed.

As can be seen from Figures 2 and 4, Dwyer et al. discloses a heat exchanger heating or cooling a gas such as air. Air passes through the exchanger on the outside of finned tubes while a heat exchange fluid flows within the tubes. The exchanger has a plurality of modules, each module having an upper inlet header 3 and a lower outlet header 4.

Figure 2 shows a fluid connection for introducing fluid into the upper headers 3 of several modules. A common manifold 7 is connected to each of the individual headers 3. Fluid flows from manifold 7 into the individually headers 3. Headers 3 are not connected to one another so as to act as a common inlet header for adjacent modules.

Contrary to the assertion in the rejection, adjacent headers 3 are not provided with orifices on their mutually confronting sides. Each header has an orifice that connects to manifold 7 via a separate pipe. These orifices are not in the sides of the headers 3 that are mutually confronting. See, e.g., Figure 2.

Further, Dwyer et al. do not show adjacent headers 3 being connected to one another in such a way that their cross section does not decrease at the connection point. See the connections to manifold 17. In addition, the rejection fails to indicate which part of the apparatus of Dwyer et al. serves as a connection piece introduced between two headers wherein the side of the connection piece which faces the heat exchanger blocks is completely covered by a side face of a heat exchanger block and/or a sheet and/or a strip. Also, the rejection fails to indicate which part of the apparatus of Dwyer et al. serves as a sheet or a strip that connects two heat exchangers to one another.

In view of the above remarks, it is respectfully submitted that Dwyer et al. fails to anticipate applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

Rejection of Claim 9 under 35 USC §102(b)/ §103(a) in view of Levy et al.

Claim 9 is rejected as allegedly being anticipated in view of Levy et al. (US 6,089,313), or as being obvious in view of Levy et al. in combination with Sasaki et al. This rejection is also respectfully traversed.

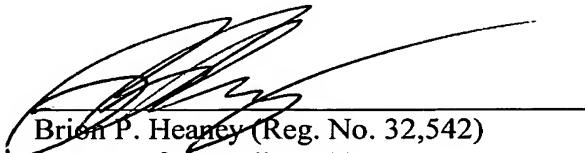
In the rejection, it is argued that it is well known to test individual heat exchange blocks for leaks before assembling them together. Sasaki et al. is cited for its disclosure at column 11, lines 56-63 of inspecting unit heat exchangers before final assembly.

The assertions in the rejection do not overcome the deficiencies discussed above with respect to the disclosure of Levy et al. Nor do the assertions provide any suggestion or motivation to modify the disclosure of Levy et al. in such a manner as to arrive at an embodiment of applicants' claimed invention.

Thus, it is respectfully submitted that Levy et al., taken alone or in combination with Sasaki et al., fails to anticipate or render obvious applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



Brian P. Heaney (Reg. No. 32,542)
Attorney for Applicant(s)

MILLEN, WHITE, ZELANO & BRANIGAN, P.C.
Arlington Courthouse Plaza 1
2200 Clarendon Blvd., Suite 1400
Arlington, Virginia 22201
Telephone: (703) 812-5308
Facsimile: (703) 243-6410
Internet Address: heaney@mwzb.com

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